



#10

SEQUENCE LISTING

<110> Li, Zhijian T
Gray, Dennis J

<120> Bi-Directional Dual Promoter Complex with Enhanced Promoter Activity for Transgene Expression in Eukaryotes

<130> 7270-72978

<140> 10/075,105

<141> 2002-02-13

<150> 60/268,358

<151> 2001-02-13

<160> 18

<170> PatentIn version 3.1

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ataaaattat attaattctg tctcttggtg gttecgctcta tctttttctg ttttctgct
480

tcaaccataa catatacaag aactacattt tccaagctag atatatctaa catgactgac
540

tttgtaaatt tcttttgcca agttaaagaa aaaaaatgat gttatccaaa taataaagag
600

aaagagccct aatgaaaaaa atgatttact attagagttg ttcagctaatt cacatcaatt
660

atgggttttca tcaagtatga ctaatggcgg ctcttatctc agctgatgtg acattgaaat
720

tctttgactt taacactaat gtcatatgct ttcaaattaa taatccgata aagctgcaga
780

ctcattaact taaaagaaga tatagactca ttaacttaaa agaagatata gattccaaca
840

caagttcaaa attcataaac gtcaatcttg gctaaatttc tgaacatcaa tgcattcctt
900

taaaatatag ataataagtt aggatgttgt cactttctta aagcatattc cgactgagtc
960

tggtagaatc tcataaactt taggccttat ctcttcaatt aggcaattac ttacctccgc
1020

tctactttta gaaaattcaa tggagtacac cattattaag ttcataataa aataaaatta
1080

tattaattct gtctcttggt ggttcgctct atctttttct gttttcctgc ttcaaccata
1140

acataataca gaactacatt ttccaagcta gatatatcta acatgactga ctttgtaaatt
1200

ttcttttgcc aagttaaaga aaaaaaatga tgttatccaa ataataaaga gaaagagccc
1260

taatgaaaaa aatgatttac tattagagtt gttcagctaa tcacatcaat tatggttttc
1320

atcaagtatg actaatggcg gctcttatct cacgtgatgt gacattgaaa ttctttgact
1380

ttaacactaa tgtcatatgc tttcaaatta ataatccgat aaagtctgct aacatgtgac
1440

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1500

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1544

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<211> 1544
<212> DNA
<213> unknown

<220> ACT2
<223>

<400> 12
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120

tcgaagtctg agtaattgaa ttttcttcta tatctgagta attgaatttt cttctatatc
180

taaggttgtg ttcaagtttt aagtatttgc agttagaacc gatttaaaga cttgtagtta
240

cgtaaggaaa ttttatatct attattcaat cctacaacag tgaaagaatt tcgtataagg
300

ctgactcaga ccatcttaga gtatttgaaa tccggaatag agaagttaat ccgttaatga
360

atggaggcga gatgaaattc ttttaagtta cctcatgtgg taataattca agtatatttt
420

tattttaata taattaagac agagaacaac caagcgagat agaaaaagac aaaaggacga
480

agttggtatt gtatatgttc ttgatgtaaa aggttcgata tatatagatt gtactgactg
540

aaacatttaa agaaaacggt tcaatttctt ttttttacta caataggttt attatttctc
600

tttctcggga ttactttttt tactaaatga taatctcaac aagtcgatta gtgtagtta
660

taccaaagt agttcatact gattaccgcc gagaatagag tgcactacac tgtaacttta
720

agaaactgaa attgtgatta cagtatacga aagtttaatt attaggctat ttcgacgtct
780

gagtaattga attttcttct atatctgagt aattgaattt tcttctatat ctaaggttgt
840

gttcaagttt taagtatttg cagttagaac cgatttaaag acttgtagtt acgtaaggaa
900

attttatatc tattattcaa tcctacaaca gtgaaagaat ttcgtataag gctgactcag
960

accatcttag agtatttgaa atccggaata gagaagttaa tccgttaatg aatggaggcg
1020

agatgaaatt cttttaagtt acctcatgtg gtaataattc aagtatattt ttattttaat
1080

ataattaaga cagagaacaa ccaagcgaga tagaaaaaga caaaaggacg aagttggtat
1140

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1200

aagaaaacgg ttcaatttct tttttttact acaatagggt tattatttct ctttctcggg
1260

attacttttt ttactaaatg ataatctcaa caagtcgatt agtgtagtta ataccaaag
1320

tagttcatatc tgattaccgc cgagaataga gtgcactaca ctgtaacttt aagaaactga
1380

aattgtgatt acagtatacg aaagtttaat tattaggcta tttcagacga ttgtacactg
1440

aaagggttaaa aaaagaaaat gtttaacgtc tgaaaagttg agaataaggg ataattttgg
1500

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1544

<210> 13
<211> 1465
<212> DNA
<213> unknown

<220> UBQ-1

<223>

<400> 13

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120

taccacaaaa gcttagttga taaaatattt ttatttggtt gtaattttgt aatatcccgg
180

gatatttcac aaattgaaca tagactacag aattttagaa aacaaacttt ctctctctta
240

tctcaccttt atctttttaga gagaaaaagt tcgatttccg gttgaccgga atgtatcttt
300

gttttttttg ttttgtaaca tatttcgttt tccgatttag atcggatctc cttttccggt
360

ttgtcggacc ttcttccggt ttatccggat ctaataatat ccatcttaga cttagctaag
420

tttgatctg ttttttggtt agctcttgtc aatcgccctca tcatcagcaa gaagggtgaaa
480

tttttgacaa ataaatctta gaatcatgta gtgtctttgg accttgggaa tgatagaaac
540

gatttgttat agctactcta tgtatcagac cctgaccaag atccaacaat ctcatagggt
600

ttgtgcatat gaaaccttcg actaacgaga agtgggtcttt taatgagaga gatatctaaa
660

atgttatctt aaaagcccac tcaaattctca aggcataagg tagaaatgca aatttgga
720

gtgggctggg ccttctgcag ttgataaaat atttttattt gggttgtaatt ttgtaatatc
780

ccgggatatt tcacaaattg aacatagact acagaatttt agaaaacaaa ctttctctct
840

cttatctcac ctttatcttt tagagagaaa aagttcgatt tccggttgac cggaatgtat

900

ctttgttttt tttgttttgt aacatatttc gttttccgat ttagatcgga tctccttttc
960

cgttttgtcg gaccttcttc cggtttatcc ggatctaata atatccatct tagacttagc
1020

taagtttgga tctgtttttt ggtagctct tgtcaatcgc ctcatcatca gcaagaaggt
1080

gaaatttttg acaaataaat cttagaatca tgtagtgtct ttggaccttg ggaatgatag
1140

aaacgatttg ttatagctac tctatgtatc agaccctgac caagatccac caatctcata
1200

ggttttgtgc atatgaaacc ttcgactaac gagaagtggc cttttaatga gagagatatc
1260

taaaatgtta tcttaaaagc ccactcaaat ctcaaggcat aaggtagaaa tgcaaatttg
1320

gaaagtgggc tgggcctttt gtggtaaagg cctgtaacct agcccaatat tagcaaaacc
1380

ctagacgcgt acattgacat atataaaccc gcctcctcct tgtttagggg ttctacgtga
1440

gagaagacga aacacaaaag gatcc
1465

<210> 14
<211> 1465
<212> DNA
<213> unknown

<220> UBQ-1
<223>

<400> 14
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aatatataca gttacatgcg cagatcccaa aacgattata acccgatcca atgtccggaa
120

atggtgtttt cgaatcaact attttataaa aataaaccaa cattaaaaca ttatagggcc
180

ctataaagtg tttaacttgt atctgatgtc ttaaaatctt ttgtttgaaa gagagagaat
240

agagtggaaa tagaaaatct ctctttttca agctaaaggc caactggcct tacatagaaa
300

caaaaaaac aaaacattgt ataaagcaaa aggctaaatc tagcctagag gaaaaggcaa
360

aacagcctgg aagaaggcca aataggccta gattattata ggtagaatct gaatcgattc
420

aaacctagac aaaaaaccaa tcgagaacag ttagcggagt agtagtcgtt cttccacttt
480

aaaaactgtt tatttagaat cttagtacat cacagaaacc tggaaccctt actatctttg
540

ctaaacaata tcgatgagat acatagtctg ggactgggtc taggttggtta gagtatccaa
600

aacacgtata ctttggaagc tgattgctct tcaccagaaa attactctct ctatagattt
660

tacaatagaa ttttcgggtg agtttagagt tccgtattcc atctttacgt ttaaaccctt
720

cacccgaccc ggaagacgtc aactatttta taaaaataaa ccaacattaa aacattatag
780

ggccctataa agtgtttaac ttgtatctga tgtcttaaaa tcttttgttt gaaagagaga
840

gaatagagtg gaaatagaaa atctctcttt ttcaagctaa aggccaactg gccttacata
900

gaaacaaaaa aaacaaaaca ttgtataaag caaaaggcta aatctagcct agaggaaaag
960

gcaaaacagc ctggaagaag gccaaatagg cctagattat tataggtaga atctgaatcg
1020

attcaaacct agacaaaaaa ccaatcgaga acagttagcg gagtagtagt cgttcttcca
1080

ctttaaaaac tgtttattta gaatcttagt acatcacaga aacctggaac ccttactatc
1140

tttgctaaac aatatcgatg agatacatag tctgggactg gttctagggtt gttagagtat
1200

ccaaaacacg tatacttttg aagctgattg ctcttcacca gaaaattact ctctctatag
1260

attttacaat agaattttcg ggtgagttta gagttccgta ttccatcttt acgtttaaac
1320

ctttcaccgc acccggaata caccatttcc ggacattgga tcgggttata atcgttttgg
1380

gatctgcgca tgtaactgta tatatttggg cggaggagga acaaattcca aagatgcact
1440

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1465

<210> 15
<211> 1618
<212> DNA
<213> unknown

<220> UBQ-1
<223>

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ttacaccaa ttttttcttg ttttcacaaa tgccgaactt ggttccttat ataggaaaac
120

tcaagggcaa aaatgacacg gaaaaatata aaaggataag tagtggggga taagattcct
180

ttgtgataag gttactttcc gaagcttagt tgataaaata tttttatttg gttgtaattt
240

tgtaatatcc cgggatattt cacaaattga acatagacta cagaatttta gaaaacaaac
300

tttctctctc ttatctcacc tttatctttt agagagaaaa agttcgattt ccggttgacc
360

ggaatgtatc tttgtttttt ttgttttgta acatatttcg ttttccgatt tagatcggat
420

ctcctttttc gttttgtcgg accttcttcc ggtttatccg gatctaataa tatccatctt
480

agacttagct aagtttgat ctgttttttg gttagctctt gtcaatcgcc tcatcatcag
540

caagaagggtg aaatttttga caaataaatc ttagaatcat gtagtgtctt tggaccttgg
600

gaatgataga aacgatttgt tatagctact ctatgtatca gacctgacc aagatccaac
660

aatctcatag gttttgtgca tatgaaacct tcgactaacg agaagtgggc ttttaatgag
720

agagatatct aaaatgttat cttaaaagcc cactcaaate tcaaggcata aggtagaaat
780

gcaaatttgg aaagtgggct gggccttctg cagttgataa aatattttta tttggttgta
840

attttgtaat atcccgggat atttcacaaa ttgaacatag actacagaat tttagaaaac
900

aaactttctc tctcttatct cacctttatc ttttagagag aaaaagttcg atttccggtt
960

gaccggaatg tatctttggt ttttttggtt tgtaacatat ttcgttttcc gatttagatc
1020

ggatctcctt ttccgttttg tcggaccttc ttccggttta tccggatcta ataatatcca
1080

tcttagactt agctaagttt ggatctgttt tttggttagc tcttgtcaat cgcctcatca
1140

tcagcaagaa ggtgaaattt ttgacaaata aatcttagaa tcatgtagtg tctttggacc
1200

ttgggaatga tagaaacgat ttgttatagc tactctatgt atcagacctt gaccaagatc
1260

caacaatctc ataggttttg tgcatatgaa accttcgact aacgagaagt ggtcttttaa
1320

tgagagagat atctaaaatg ttatcttaaa agccactca aatctcaagg cataaggtag
1380

aatgcaa at ttggaaagtg ggctgggcct tggtagccgg aaagtaacct tatcaciaag
1440

gaatcttatc cccactact tatcctttta tttttttccg tgtcattttt gcccttgagt
1500

tttcctatat aaggaaggaa gttcggcatt tgtgaaaaca agaaaaaatt tgggtgaagc
1560

tattttcttt gaagtactga ggatacaact tcagagaaat ttgtaagttt gtggatcc
1618

<210> 16
<211> 1618
<212> DNA
<213> unknown

<220> UBQ-1
<223>

<400> 16
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120

agttcccggt tttactgtgc ctttttatat tttcctattc atcaccctt attctaagga
180

aacactattc caatgaaagg cttcgaatca actattttat aaaaataaac caacattaaa
240

acattatagg gccctataaa gtgtttaact tgtatctgat gtcttaaaag cttttgtttg
300

aaagagagag aatagagtgg aaatagaaaa tctctctttt tcaagctaaa ggccaactgg
360

ccttacatag aaacaaaaaa aacaaaacat tgtataaagc aaaaggctaa atctagccta
420

gaggaaaagg caaacagcc tggaagaagg ccaaataggc ctagattatt ataggtagaa

480

tctgaatcga ttcaaacct gacaaaaaac caatcgagaa cagttagcgg agtagtagtc
540

gttcttccac tttaaaaact gtttatttag aatcttagta catcacagaa acctggaacc
600

cttactatct ttgctaaaca atatcgatga gatacatagt ctgggactgg ttctagggtg
660

ttagagtatc caaaacacgt atactttgga agctgattgc tcttcaccag aaaattactc
720

tctctataga ttttacaata gaattttcgg gtgagtttag agttccgtat tccatcttta
780

cgtttaaacc tttcacccga cccggaagac gtcaactatt ttataaaaat aaaccaacat
840

taaaacatta tagggcccta taaagtgttt aacttgtatc tgatgtctta aaatcttttg
900

tttgaaagag agagaataga gtggaaatag aaaatctctc tttttcaagc taaaggccaa
960

ctggccttac atagaaacaa aaaaaacaaa acattgtata aagcaaaagg ctaaattctag
1020

cctagaggaa aaggcaaaac agcctggaag aaggccaaat aggcctagat tattataggt
1080

agaatctgaa tcgattcaaa cctagacaaa aaaccaatcg agaacagtta gcggagtagt
1140

agtcgttctt ccactttaaa aactgtttat ttagaatctt agtacatcac agaaacctgg
1200

aacccttact atctttgcta aacaatatcg atgagataca tagtctggga ctggttctag
1260

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1320

actctctcta tagattttac aatagaattt tcgggtgagt ttagagttcc gtattccatc
1380

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1440

cttagaatag ggggtgatga ataggaaaat ataaaaaggc acagtaaaaa cggaactca
1500

aaaggatata ttccttggtt caagccgtaa acacttttgt tcttttttaa accacattcg
1560

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1618

<210> 17

<211> 1524

<212> DNA

<213> unknown

<220> CaMV 35S

<223>

<400> 17

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aaggatagtg ggattgtgcg tcatccctta cgtcagtgga gatactgcag aagcttcaga
120

ctcattaact taaaagaaga tatagactca ttaacttaaa agaagatata gattccaaca
180

caagttcaaa attcataaac gtcaatcttg gctaaatttc tgaacatcaa tgcattcctt
240

taaaatatag ataataagtt aggatgttgt cactttctta aagcatattc cgactgagtc
300

tggtagaatc tcataaactt taggccttat ctcttcaatt aggcaattac ttacctccgc
360

tctactttta gaaaattcaa tggagtacac cattattaag ttcataataa aataaaatta
420

tattaattct gtctcttggt ggttcgctct atctttttct gttttcctgc ttcaaccata
480

acatatcaa gaactacatt ttccaagcta gatatatcta acatgactga ctttgtaa
540

ttcttttgcc aagttaaaga aaaaaaatga tgttatccaa ataataaaga gaaagagccc
600

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660

atcaagtatg actaatggcg gctcttatct cacgtgatgt gacattgaaa ttctttgact
720

ttaacactaa tgtcatatgc tttcaaatta ataatccgat aaagctgcag actcattaac
780

ttaaaagaag atatagactc attaacttaa aagaagatat agattccaac acaagttcaa
840

aattcataaa cgtcaatctt ggctaaattt ctgaacatca atgcattcct ttaaaatata
900

gataataagt taggatgttg tcactttctt aaagcatatt ccgactgagt ctggtagaat
960

ctcataaact ttaggcctta tctcttcaat taggcaatta cttacctcg ctctacttta
1020

agaaaattca atggagtaca ccattattaa gttcatataa aaataaaatt atattaattc
1080

tgtctcttgt tggttcgctc tatctttttc tgttttcctg cttcaacat aacatataca
1140

agaactacat tttccaagct agatatatct aacatgactg actttgtaaa tttcttttgc
1200

caagttaaag aaaaaaatg atgttatcca aataataaag agaaagagcc ctaatgaaaa
1260

aatgatttta ctattagagt tgttcagcta atcacatcaa ttatgggttt catcaagtat
1320

gactaatggc ggctcttatc tcacgtgatg tgacattgaa attctttgac tttaacacta
1380

atgtcatatg ctttcaaatt aataatccga taaaggtacc tatctccact gacgtaaggg
1440

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1500

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1524

<210> 18
<211> 1524
<212> DNA
<213> unknown

<220> CaMV 35S
<223>

<400> 18
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ttcctatcac cctaacacgc agtagggaat gcagtcacct ctatgacgtc ttcgaagtct
120

gagtaattga attttcttct atatctgagt aattgaattt tcttctatat ctaaggttgt
180

gttcaagttt taagtatttg cagttagaac cgatttaaag acttgtagtt acgtaaggaa
240

atthttatc tattattcaa tcctacaaca gtgaaagaat ttcgtataag gctgactcag
300

accatcttag agtatttgaa atccggaata gagaagttaa tccgttaatg aatggaggcg
360

agatgaaatt cttttaagtt acctcatgtg gtaataattc aagtatattt ttattttaat
420

ataattaaga cagagaacaa ccaagcgaga tagaaaaaga caaaaggacg aagttggtat
480

tgtatatggt cttgatgtaa aaggttcgat ctatatagat tgtactgact gaaacattta
540

aagaaaagcc ttcaatttct tttttttact acaatagggt tattatttct ctttctcggg
600

attacttttt ttactaaatg ataatctcaa caagtcgatt agtgtagtta ataccaaaag
660

tagttcatc tgattaccgc cgagaataga gtgcactaca ctgtaacttt aagaaactga
720

aattgtgatt acagtatacg aaagtttaat tattaggcta ttcgacgtc tgagtaattg
780

aattttcttc tatactctgag taattgaatt ttcttctata tctaagggtg tgttcaagtt
840

ttaagtattt gcagttagaa ccgatttaaa gacttgtagt tacgtaagga aattttatat
900

ctattattca atcctacaac agtgaaagaa ttctgtataa ggctgactca gaccatctta
960

gagtatttga aatccggaat agagaagtta atccgttaat gaatggaggc gagatgaaat
1020

tcttttaagt tacctcatgt ggtaataatt caagtatatt tttattttaa tataattaag
1080

acagagaaca accaagcgag atagaaaaag acaaaaggac gaagttggta ttgtatatgt
1140

tcttgatgta aaaggttcga tctatataga ttgtactgac tgaaacattt aaagaaaacg
1200

gttcaatttc ttttttttac tacaataggt ttattatttc tctttctcgg gattactttt
1260

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1320

ctgattaccg ccgagaatag agtgcactac actgtaactt taagaaactg aaattgtgat
1380

tacagtatac gaaagtttaa ttattaggct atttccatgg atagaggtga ctgcattccc
1440

tactgcgtgt tagggtgata ggaagcgctc tgggaaggag atatattcct tcaagtaaag
1500

taaacctctc ctgtgcgacc tagg
1524